REMARKS

The following remarks are made in response to the Office Action mailed October 18, 2006. Claims 1-48 were rejected. With this Response, claim 48 has been amended. Claims 1-48 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claims 1 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Dietz et al., U.S. Patent No. 6,839,751 ("Dietz") in view of Rosenberg et al., U.S. Patent Application Publication No. 2003/0023951 ("Rosenberg").

Applicant submits that Dietz and Rosenberg, either alone, or in combination, fail to teach or suggest the limitations of independent claim 1 including **generating a statistical model from a set of usage data record events; and updating the statistical model using the most recent record event by adding the most recent record event to the statistical model, wherein an identifier is associated with each record event, including updating only a portion of the statistical model associated with the identifier**.

Dietz discloses a method and monitor apparatus for analyzing a flow of packets passing through a connection point on a computer network. The method includes receiving a packet from a packet acquisition device, and looking up a flow-entry database containing flow-entries for previously encountered conversational flows. The looking up to determine if the received packet is of an existing flow. Each and every packet is processed. If the packet is of an existing flow, the method updates the flow-entry of the existing flow, including storing one or more statistical measures kept in the flow-entry. The statistical measures are used to determine metrics related to the flow. The metrics may be base metrics from which quality of service metrics are determined, or may be the quality of service metrics. (Abstract).

The Examiner submits that Dietz teaches generating a statistical model from a set of record events, citing column 3, lines 14-33; column 17, lines 35-53; and column 10, line 55 - column 11, line 5. (Office Action, page 3). The cited passage of column 17 in Dietz, however, describes that data packets themselves are analyzed, not usage data record events. In fact, that same passage in column 17 provides that these same statistical operations are

done for each of the data packets and these statistics "may include determining network usage metrics ***from*** the statistical measures. . . ." (Col. 17, lines 47-48; emphasis added). In other words, at most, Dietz teaches deriving network usage metrics from statistical measurements, but not building statistical models from usage data record events.

The Examiner admits that Dietz fails to disclose updating only a portion of the statistical model associated with the identifier. The Examiner submits that Rosenberg teaches this claim limitation. (Office Action, page 3). Applicant submits that Rosenberg also fails to teach or suggest this claim limitation.

Rosenberg discloses a toolbox and method for processing data statistically in a MATLAB environment of a computer. The method includes the steps of embedding input data and associated meta-data in a single object, and constructing the input data and associated meta-data into a plurality of statistical variables, wherein the plurality of statistical variables can be processed statistically. All statistical variables in the dataset can be statistically processed at once using standard MATLAB syntax. (Abstract).

The Examiner submits that Rosenberg discloses updating only a portion of the statistical model associated with the identifier, citing paragraphs [0071]-[0073] and [0067]. (Office Action, page 4). The cited passages of Rosenberg, however, disclose that when input data are adjusted, the output is changed accordingly. As shown in FIG. 9(A), at step 910, a statistical model is selected to process input data. At step 920, a user adjusts the input data using MATLAB command. At step 935, new input data are provided through, for example GUI 20. At step 930, statistical model constructor embeds the adjusted input data, existing control parameters, and the output into a single object, which is then processed at step 910 according to the model. (Para. [0071]). Rosenberg also discloses that when the control parameters are adjusted, the output is changed accordingly. As shown in FIG. 9(B), at step 910, a statistical model is selected to process input data. The statistical model has its default or existing control parameters. At step 940, a user adjusts the control parameters. At step 945, new control parameters are input through, for example, GUI 20. At step 950, statistical model constructor 950 embeds the input data, new control parameters, and the output into a single object, which is then processed at step 910 according to the model and the new control parameters. (Para. [0072]).

Rosenberg discloses that the entire statistical model is updated or reconstructed when the input data or control parameters change. Statistical model constructor 930 or statistical model constructor 950 reconstruct the statistical model from scratch using the new input data. In contrast, claim 1 recites updating only a portion of the statistical model associated with the identifier.

In addition, there is no teaching or suggestion to combine Dietz and Rosenberg to arrive at the invention recited by claim 1. Dietz relates to analyzing a flow of packets passing through a connection point on a computer network. (Abstract). Rosenberg relates to a toolbox for processing data statistically in a MATLAB environment of a computer. MATLAB is an analysis and visualization tool used to solve mathematical problems arising in diverse scientific and engineering disciplines, and for prototyping and rapid development of technical applications. (Para. [0004]). A user can communicate with the MATLAB environment through GUI 20, in which the MATLAB environment can be displayed. (Para. [0041]). MATLAB is not capable of processing data in real-time as required by Dietz. Therefore, one skilled in the art would not look to Rosenberg for a system to process real-time data.

In view of the above, Applicant submits that the above rejection of independent claim 1 under 35 U.S.C. § 103(a) should be withdrawn. Allowance of claim 1 is respectfully requested.

For the same reasons as discussed above with reference to claim 1 and for additional reasons discussed below, Dietz and Rosenberg, either alone, or in combination, fail to teach or suggest the limitations recited by independent claim 13 including **defining a statistical model for analyzing the stream of network usage data over the rolling time interval; defining the rolling time interval to include a plurality of update time intervals; generating the statistical model over the rolling time interval using the statistical model and each record event stored in the history cache; and updating the statistical model using the statistical model and a most recent record event for a most recent update time interval, including updating only a portion of the statistical model associated with the most recent record event**.

The Examiner submits that defining the rolling time interval to include a plurality of update time intervals is disclosed by Dietz by the "time interval" in column 33, line 15 – column 11, line 5. (Office Action, page 4). The cited text of Dietz is referring to metrics, which are used to describe events over a time interval. (Col. 33, lines 36-37). The metrics reporting process provides data that can be used to calculate useful statistical measurements. In one embodiment, the metrics reporting process is part of the state processing that is carried out from time to time according to the state, and in another embodiment, the metrics reporting process is carried out from time to time by a microprocessor having access to flow records. (Col. 32, line 63 – col. 33, line 2). Dietz does not disclose defining a rolling time interval to include a plurality of update time intervals or generating the statistical model over the rolling time interval as recited by claim 13.

In view of the above, Applicant submits that the above rejection of independent claim 13 under 35 U.S.C. § 103(a) should be withdrawn. Allowance of claim 13 is respectfully requested.

The Examiner rejected claims 23, 25, 26, 37, 45, and 48 under 35 U.S.C. § 103(a) as being unpatentable over Dietz in view of Rosenberg and Kawasaki, U.S. Patent No. 6,539,375 ("Kawasaki").

For the same reasons as discussed above with reference to claims 1 and 13 and for additional reasons discussed below, Dietz, Rosenberg, and Kawasaki, either alone, or in combination, fail to teach or suggest the limitations of independent claim 23 including **defining a statistical model for analyzing the stream of network usage data over the rolling time interval; defining the rolling time interval to include a plurality of update time intervals; receiving a record event set from the stream of data for each update time interval, each record event set including one or more record events, wherein each record event is associated with a user identifier; generating the statistical model over the rolling time interval using each record event stored in the history cache; and updating only a portion of the statistical model associated with the most recent record event for a most recent update time interval**.

The Examiner admits that Dietz and Rosenberg fail to disclose wherein each record event is associated with a user identifier. The Examiner submits that Kawasaki teaches this claim limitation. (Office Action, page 7).

There is no teaching or suggestion to combine Dietz, Rosenberg, and Kawasaki to arrive at the invention recited by claim 23. Kawasaki relates to a method and system for profiling a user of the internet according to predefined categories of interest. (Abstract). One skilled in the art would not combine the packet analyzing system of Dietz with the MATLAB toolbox of Rosenberg and the profiling system of Kawasaki to provide the invention recited by claim 23.

In view of the above, Applicant submits that the above rejection of independent claim 23 under 35 U.S.C. § 103(a) should be withdrawn. Dependent claims 25 and 26 further define patentably distinct independent claim 23. Accordingly, Applicant believes these dependent claims are also allowable over the cited references. Allowance of claims 23, 25, and 26 is respectfully requested.

For the same reasons as discussed above with reference to claims 1, 13, and 23, Dietz, Rosenberg, and Kawasaki, either alone, or in combination, fail to teach or suggest **a data analysis system server which generates a statistical model from a set of usage data record events, and upon receiving a most recent record event, the data analysis system server updates the statistical model using the most recent record event by adding the most recent record event to the statistical model, wherein customer usage is associated with each record event, including updating only a portion of the statistical model associated with the customer usage** as recited by independent claim 37; **generating a statistical model from a set of usage data record events; and updating the statistical model using the most recent record event by adding the most recent record event to the statistical model, wherein customer usage is associated with each record event, including updating only a portion of the statistical model associated with the customer usage** as recited by independent claim 45; and **tracking and accumulating a set of usage data record events to track customers' usage; generating a statistical model from the set of usage data record events; receiving a most recent record event associated with a customer's usage; and updating the statistical model using the most recent record event**

by adding the most recent record event to the statistical model, including independently updating only a portion of the statistical model associated with the customer's usage as recited by amended independent claim 48.

In addition, independent claim 48 has been amended as suggested by the Examiner so as to clearly distinguish over the prior art on record. In view of the above, Applicant submits that the above rejection of independent claims 37, 45, and 48 under 35 U.S.C. § 103(a) should be withdrawn. Allowance of claims 37, 45, and 48 is respectfully requested.

The Examiner rejected claims 29 and 31-36 under 35 U.S.C. § 103(a) as being unpatentable over Dietz in view of Rosenberg and Aboulnaga et al., U.S. Patent No. 6,460,045 ("Aboulnaga").

For the same reasons as discussed above with reference to claims 1 and 13 and for additional reasons discussed below, Dietz, Rosenberg, and Aboulnaga, either alone, or in combination, fail to teach or suggest the limitations of independent claim 29 including **defining a statistical model for analyzing the stream of network usage data over the rolling time interval, the statistical model including a histogram having a first axis illustrating total usage defined by a number of bins, each bin having a usage variable range, and a second axis defined by a frequency corresponding to a number of users having a total usage within the usage variable range of each bin; defining the rolling time interval to include a plurality of update time intervals; generating the statistical model over the rolling time interval using each record event stored in the history cache including generating an aggregation table; and updating the statistical model using a most recent record event for a most recent update time interval including updating only a portion of the aggregation table associated with the most recent update time interval**.

The Examiner admits that Dietz and Rosenberg fail to disclose the method generating a histogram statistical model representative of the network data, wherein the histogram having a first axis illustrating total usage defined by a number of bins, each bin having a usage variable range, and a second axis defined by a frequency corresponding to a number of users having a total usage within the usage variable range of each bin. The Examiner submits that Aboulnaga teaches these claims limitations. (Office Action, pages 15-16).

There is no teaching or suggestion to combine Dietz, Rosenberg, and Aboulnaga to arrive at the invention recited by claim 29. Aboulnaga relates to building self-tuning histograms by using feedback information about the execution of query workload rather than by examining the data. The self-tuning histograms are maintained based on feedback about the execution of a user query. (Abstract). Aboulnaga relates to histograms for data stored in databases and does not even read the data stored in the databases to build the histograms. One skilled in the art would not combine the packet analyzing system of Dietz with the MATLAB toolbox of Rosenberg and the self-tuning histograms of Aboulnaga to provide the invention recited by claim 29.

In view of the above, Applicant submits that the above rejection of independent claim 29 under 35 U.S.C. § 103(a) should be withdrawn. Dependent claims 31-36 further define patentably distinct independent claim 29. Accordingly, Applicant believes these dependent claims are also allowable over the cited references. Allowance of claims 29 and 31-36 is respectfully requested.

The Examiner rejected claims 2-6, 8-10, and 12 under 35 U.S.C. § 103(a) as being unpatentable over Dietz and Rosenberg as applied to claim 1 above, and further in view of Steinbiss et al., U.S. Patent No. 6,823,307 ("Steinbiss").

Dependent claims 2-6, 8-10, and 12 further define patentably distinct independent claim 1. Accordingly, Applicant believes these dependent claims are also allowable over the cited references. Allowance of claims 2-6, 8-10, and 12 is respectfully requested.

In addition, the Examiner admits that Dietz and Rosenberg fail to disclose the method further comprising the step of: updating the statistical model includes removing a least recent event from the statistical model. The Examiner submits that Steinbiss teaches this claim limitation. (Office Action, page 18). Applicant submits that Steinbiss fails to teach or suggest this claim limitation.

Steinbiss discloses a language model based on a speech recognition history. A small vocabulary pattern recognition system is used for recognizing a sequence of words, such as a sequence of digits or a sequence of commands. (Abstract). Steinbiss does not update a statistical model. Steinbiss merely discloses a first in-first out cache for a speech recognizer. (Col. 5, line 61 – col. 6, line 7).

In addition, Steinbiss is not analogous art. A speech recognition system is not analogous to a network data usage analysis system. One skilled in the art would not look to a vocabulary pattern recognition system when designing a network data usage analysis system. In addition, there is no teaching or suggestion to combine the packet analyzing system of Dietz with the MATLAB toolbox of Rosenberg and the vocabulary pattern recognition system of Steinbiss in a manner to provide the invention recited by claims 2, 3, and 12.

The Examiner rejected claims 7, 11, 14-22, 46, and 47 under 35 U.S.C. § 103(a) as being unpatentable over Dietz, Rosenberg, and Steinbiss as applied to claim 3 above, and further in view of Aboulnaga.

Dependent claims 7, 11, and 14-22 further define patentably distinct independent claim 1 or 13. Accordingly, Applicant believes these dependent claims are also allowable over the cited references. Allowance of claims 7, 11, and 14-22 is respectfully requested.

For the same reasons as discussed above the reference to claims 1, 3, 13, and 29, Dietz, Rosenberg, Steinbiss, and Aboulnaga, either alone, or in combination, fail to teach or suggest the limitations recited by independent claim 46 including **generating a statistical model from a set of network usage record events; and updating the statistical model using the most recent record event by adding the most recent record event to the statistical model further comprising the steps of: wherein if the history cache is full, updating the statistical model includes removing a least recent record event from the statistical model, further comprising: wherein updating the statistical model includes updating only the aggregation of record events in the tracking table for that identifier, further comprising generating a histogram statistical model from the aggregation table, wherein the history cache is an array of memory segments, wherein the number of memory segments is equal to the number of update time intervals in the rolling time interval, and storing each record event in a memory segment in the history cache, and defining an index array associated with the statistical model including a set of contiguous index segments, wherein each index segment includes a pointer to the memory segment in the history cache storing the next consecutive record event, further defining a first pointer to the index segment associated with the memory segment storing the least recent record event, wherein upon receiving a most recent record event**

the method replacing the least recent record event stored in the history cache with the most recent record event, and further moving the first pointer to the next contiguous index segment.

In view of the above, Applicant submits that the above rejection of independent claim 46 under 35 U.S.C. § 103(a) should be withdrawn. Dependent claim 47 further defines patentably distinct independent claim 46. Accordingly, Applicant believes this dependent claim is also allowable over the cited references. Allowance of claims 46 and 47 is respectfully requested.

The Examiner rejected claims 24 and 38-44 under 35 U.S.C. § 103(a) as being unpatentable over Dietz, Rosenberg and Kawasaki as applied to claims 23 and 37 above, and further in view of Steinbiss.

Dependent claims 24 and 38-44 further define patentably distinct independent claim 23 or 37. Accordingly, Applicant believes these dependent claims are also allowable over the cited references. Allowance of claims 24 and 38-44 is respectfully requested.

The Examiner rejected claims 27 and 28 under 35 U.S.C. § 103(a) as being unpatentable over Dietz, Rosenberg, and Kawasaki as applied to claim 23 above, and further in view of Aboulnaga.

Dependent claims 27 and 28 further define patentably distinct independent claim 23. Accordingly, Applicant believes these dependent claims are also allowable over the cited references. Allowance of claims 27 and 28 is respectfully requested.

The Examiner rejected claim 30 under 35 U.S.C. § 103(a) as being unpatentable over Dietz, Rosenberg, and Aboulnaga as applied to claim 29 above, and further in view of Steinbiss.

Dependent claim 30 further defines patentably distinct independent claim 29. Accordingly, Applicant believes this dependent claim is also allowable over the cited references. Allowance of claim 30 is respectfully requested.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-48 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-48 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(h)(i). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Steven E. Dicke at Telephone No. (612) 573-2002, Facsimile No. (612) 573-2005 or Tuan V. Ngo at Telephone No. (408) 447-8133, Facsimile No. (408) 447-0854. In addition, all correspondence should continue to be directed to the following address:

IP Administration
Legal Department, M/S 35
HEWLETT-PACKARD COMPANY
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Respectfully submitted,

N. Lee Rhodes,

By his attorneys,

DICKE, BILLIG & CZAJA, PLLC
Fifth Street Towers, Suite 2250
100 South Fifth Street
Minneapolis, MN 55402
Telephone: (612) 767-2502
Facsimile: (612) 573-2005

Date: March 19, 2007

/paulpkempf/
Paul P. Kempf
Reg. No. 39,727

PPK:uw:cms